



BB-01-2016

TopAM

Full Title: Tailoring ODS materials processing routes for additive manufacturing of high temperature devices for aggressive environments

Aim:

The aim of topAM is to develop novel oxide-particle-dispersoid strengthened (ODS) high-temperature alloys that are tailored for AM. The field of industrial application of such new materials are aggressive, high-temperature environments with challenging mechanical and corrosive operational demands.

Concept:

The project targets topologically optimized and additively manufactured gas burner heads and heat exchangers. The use of such optimized devices under extreme service conditions is driven by the necessity for energy efficiency solutions and extended life-times in future low-carbon technologies. Combining the advantages of both, ODS alloys and AM, offers the potential to obtain unique material properties. To meet the project's objectives, the topAM consortium pools the following expertise: - The use of advanced interlinked material simulation tools (integrated computational materials engineering - ICME) and artificial intelligence (AI) approaches for alloy, component, and process design, - the application of a new processing route combining nanotechnologies for powder modification and AM by laser powder bed fusion (LPBF), - the development and validation of a lifetime prediction model-based on thorough computational and experimental studies in corrosive, high-temperature environments.

Start date:

01/01/2021

End date:

31/12/2024